

Claims

1. An electric device for detecting the presence of a signal of a certain frequency in a line connection (301), characterized in that it comprises at least three energy-storing components (302, 303, 304, 305, 501, 502, 503, 504) connected in parallel to said line connection,
 - switching means (306) for making a connection selectively from each energy-storing component to a certain reference,
 - means (CLK1, CLK2) for controlling said switching means at a predetermined frequency, and
 - means (307, 308, 309) for measuring a certain quantity comparable to the energy stored from each energy-storing component.
2. A device according to Claim 1, characterized in that said switching means (306) are arranged to make a connection from each energy-storing component to the reference once during the cycle time of said signal to be detected.
3. A device according to Claim 2, characterized in that said energy-storing components are capacitances (302, 303, 304, 305), whereby
 - said means (307, 308, 309) for measuring the quantity comparable to the energy stored comprise means (307, 308) for measuring the voltage difference between capacitances, and
 - said reference is a certain standard potential.
4. A device according to Claim 3, characterized in that it comprises four capacitances (302, 303, 304, 305) as energy-storing components, whereby the means for measuring the voltage difference between capacitances are arranged to measure the voltage difference between the first (302) and third (304) capacitance and between the second (303) and fourth (305) capacitance, the order of the capacitances being the order in which the switching means are arranged to make a connection from each capacitance to the standard potential.
5. A device according to Claim 2, characterized in that said energy-storing components are inductances (501, 502, 503, 504), whereby
 - said means (307, 308, 309) for measuring the quantity comparable to the energy stored comprise means (307, 308) for measuring the current difference between inductances, and
 - said reference is a certain standard current (505).

6. A device according to Claim 1, characterized in that it also comprises filtering means (506, 507, 508, 509) for filtering said quantity comparable to the energy stored before the measurement of the quantity.
7. A method for detecting the presence of a signal of a certain frequency in a line connection, characterized in that it comprises steps in which
 - the signal is led to at least three energy-storing components connected in parallel (602),
 - each energy-storing component is regularly connected to a certain reference (603), and
 - the value of a certain quantity comparable to the energy stored is measured from each energy-storing component (604, 605).
8. A method according to Claim 7, characterized in that each energy-storing component is connected to the reference once during the cycle time of the signal to be detected.
9. A method according to Claim 8, characterized in that an even number of energy-storing components are connected to the reference in turns during the cycle time of the signal to be detected in the order from one to N, where N is an even number, and in the measurement of the value of the quantity comparable to the energy stored the values related to the first and the $(N/2 + 1)^{th}$ component are compared, and similarly the values related to the second and the $(N/2 + 2)^{th}$ component and so forth up to the i^{th} and $(N/2 + i)^{th}$ component are compared, until $(N/2 + i) = N$.
10. A method according to Claim 7, characterized in that the value of said quantity comparable to the energy stored is also filtered before it is measured.